

VIA FACSIMILE (703) 872-9314

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Remarks

The Office Action mailed July 10, 2003 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1-42 are pending in this application. Claims 9, 11, and 22 have been canceled. Claims 18 and 34 stand objected to. Claims 1-42 stand rejected.

The objection to Claims 18 and 34 is respectfully traversed. Claims 18 and 34 have been amended as suggested in the Office Action dated July 10, 2003. Therefore, Applicants respectfully request that the objection to Claims 18 and 34 be withdrawn.

The rejection of Claims 1-3, 6-7, 9, 11, 17-18, and 35-41 under 35 U.S.C. § 102(e) as being anticipated by Holupka et al. (U.S. Patent No. 6,256,529 B1, hereinafter "Holupka") is respectfully traversed.

Holupka describes that computer software can be utilized in a conventional manner to visualize 3D imaging data in various formats. The formats include orthogonal two dimensional (2D) images, oblique 2D images, and translucent 3D rendering. Holupka further describes that reconstructions can be directly displayed on a computer monitor, and a 3D translucent, stereoscopic, rendering is also available in a Virtual Reality (VR) mode. Column 4, lines 41-47. Holupka also describes that a user will have the ability to select a 3D image volume for archiving as part of the system software. The image stacks can then be reviewed in any of a plurality of various visualization modes (standard orthogonal 2D views, oblique 2D views, or 3D translucent views). In addition, the user will have the ability to store any of the 2D views available at any time during an intraoperative session. Column 5, lines 60-67.

Holupka further describes that a diagnostic probe (12) is preferably a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D

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imaging volume. As the probe rotates, images are captured and digitized by use of an imaging card (14), so as to create a fixed number of images slices per rotation. An alternative method utilizes a transverse oriented phased array form of the probe which is moved longitudinally in an automated rapid sequence so as to create a series of transverse image slices automatically.

Another embodiment of the probe can incorporate multiple transverse phased arrays arranged parallel to each other orthogonal to the axis of an endorectal probe to produce multiple simultaneous image slices. The 3D image data will be represented as a three dimensional image raster. Column 4, line 66 to column 5, line 15. The 3D image data arising from the ultrasound probe is preferably buffered on the imaging card. The 3D image is preferably represented as a series of 2D images. This is referred to as the image stack or 3D image raster. The 3D image raster is represented in memory as a linear array of bytes of length $N \times M \times P$ where N is the width of the 2D image in pixels, M is the height a 2D image in pixels, and P is the number of 2D images in the image stack. Column 5, lines 48-56.

Claim 1 recites an imaging system including "an exam prescription subsystem which specifies the manner in which data is to be acquired; and a visualization subsystem responsible for controlling display of acquired images and data, said visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein said volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, said rotation angle varying cyclically as the 3D model is rendered from frame to frame".

Holupka neither describes nor suggests an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is

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rendered from frame to frame. Moreover, Holupka neither describes nor suggests an imaging system wherein a volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, and in contrast to the present invention, Holupka describes a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D imaging volume. Accordingly, Applicants respectfully submit that Claim 1 is patentable over Holupka.

Claims 9 and 11 have been canceled. Claims 2-3, 7, 17, and 18 depend from independent Claim 1 which is submitted to be in condition for allowance. When the recitations of Claims 2-3, 7, 17, and 18 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that dependent Claims 2-3, 7, 17, and 18 are also patentable over Holupka.

Claim 35 recites a method for operating a medical imaging system to generate three dimensional models while the system acquires cross-sectional data, wherein the method includes "acquiring a first slice of data; and generating a three dimensional model based on the first slice of data".

Holupka neither describes nor suggests a method for operating a medical imaging system to generate three dimensional models while the system acquires cross-sectional data, wherein the method includes acquiring a first slice of data, and generating a three dimensional model based on the first slice of data. Moreover, Holupka neither describes nor suggests a method including generating a three dimensional *model based on the first slice* of data. Rather, and in contrast to the present invention, Holupka describes a 3D image raster. Accordingly, Applicants respectfully submit that Claim 35 is patentable over Holupka.

Claims 36-41 depend from independent Claim 35 which is submitted to be in condition for allowance. When the recitations of Claims 36-41 are considered in combination with the recitations of Claim 35, Applicants respectfully submit that dependent Claims 36-41 are also patentable over Holupka.

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For at least the reasons set forth above, Applicants respectfully request that the Section 102 rejection of Claims 1-3, 6-7, 9, 11, 17-18, and 35-41 be withdrawn.

The rejection of Claims 4, 5, 8, 12, 19, 20-29, and 34 under 35 U.S.C. § 103(a) as being unpatentable over Holupka and Vining (U.S. Patent No. 5,782,762) is respectfully traversed.

Holupka is described above. Vining describes generating a wireframe model (16) from an isosurface (15). The wireframe model is formed as a series of polygonal surfaces that approximates a surface of a region of interest such as a selected organ. The wireframe model is defined by a series of vertices which are interconnected by a set of line segments. The wireframe model appears as a three-dimensional wire mesh object which can be rendered into a three-dimensional image (17). The three-dimensional image is generated by appropriately shading the polygons of the wireframe model to provide a three-dimensional image of the selected organ. The three-dimensional image is displayed on a computer monitor (28). Additionally, the displayed imagery can be recorded on a video recorder (30) or photographed for future viewing. An input, in the form of a computer mouse (27), is provided on a graphics computer (26) to permit a user to manipulate the displayed imagery. Column 7, lines 41-57.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Holupka according to the teachings of Vining. More specifically, it is respectfully submitted that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01. Accordingly, Applicants have not been provided with any reference which teaches an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of

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acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame.

Rather, Holupka describe a 3D image raster, and Vining describes generating a wireframe model from an isosurface, wherein the wireframe model can be rendered into a three-dimensional image which can be recorded on a video recorder.

The combination of Holupka and Vining does not teach or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame.

Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, "it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the

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prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Although it is asserted within the Office Action that the motivation for combining Holupka with Vining is that a skilled artisan would be motivated to combine the teachings of Vining and Holupka since they are analogous in 3D imaging and so that a permanent record can be made for future viewing, Applicants respectfully submit that Vining and Holupka, alone or in combination, do not describe or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, Holupka describe a 3D image raster, and Vining describes generating a wireframe model from an isosurface, wherein the wireframe model can be rendered into a three-dimensional image which can be recorded on a video recorder.

Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of Claims 4, 5, 8, 12, 19, 20-29, and 34 be withdrawn.

Furthermore, Applicants respectfully submit that no motivation for the combination can be found within Vining or Holupka, as Holupka and Vining teach away from each other.

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Specifically, Holupka describe a 3D *image* represented as a series of 2D *images* and in contrast to Holupka, Vining describes a wireframe *model* generated from an isosurface.

If art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. More specifically, Applicants respectfully submit that Vining teaches away from Holupka, and as such, there is no suggestion or motivation to combine Vining with Holupka.

Further, and to the extent understood, no combination of Holupka and Vining, alone or in combination, describes or suggests the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claims 4, 5, 8, and 12 depend from Claim 1 which recites an imaging system including "an exam prescription subsystem which specifies the manner in which data is to be acquired; and a visualization subsystem responsible for controlling display of acquired images and data, said visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein said volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, said rotation angle varying cyclically as the 3D model is rendered from frame to frame".

Neither Holupka nor Vining, alone or in combination, describe or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D

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model is rendered from frame to frame. Moreover, neither Holupka nor Vining, alone or in combination, describe or suggest an imaging system wherein a volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, and in contrast to the present invention, Holupka describes a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D imaging volume, and Vining describe a three-dimensional image which can be recorded on a video recorder. Accordingly, Applicants respectfully submit that Claim 1 is patentable over Holupka and Vining.

Claims 4, 5, 8, and 12 depend from independent Claim 1 which is submitted to be in condition for allowance. When the recitations of Claims 4, 5, 8, and 12 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that dependent Claims 4, 5, 8, and 12 are also patentable over Holupka and Vining.

Claim 19 recites a visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system for acquiring scan data, the visualization subsystem including "a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of said visualization subsystem, and a segmentation subsystem of said visualization subsystem, wherein said processor is further programmed to classify data into separate categories".

Neither Holupka nor Vining, alone or in combination, describe or suggest a visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system for acquiring scan data, the visualization subsystem including a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of the visualization subsystem, and a segmentation subsystem of the visualization subsystem, wherein the processor is further programmed to classify data into separate categories. Moreover, neither Holupka nor Vining, alone or in combination, describe or suggest a processor programmed to render an image from data received from at least one of the

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data acquisition system, a filtering component of the visualization subsystem, and a segmentation subsystem of the visualization subsystem, and wherein the processor is further programmed to classify data into separate categories. Rather, Holupka describes that computer software can be utilized in a conventional manner to visualize 3D imaging data in various formats including orthogonal two dimensional (2D) images, oblique 2D images, and translucent 3D rendering, and Vining describe a three-dimensional image which can be recorded on a video recorder. Accordingly, Applicants respectfully submit that Claim 19 is patentable over Holupka and Vining.

Claims 20-29 and 34 depend from independent Claim 19 which is submitted to be in condition for allowance. When the recitations of Claims 20-29 and 34 are considered in combination with the recitations of Claim 19, Applicants respectfully submit that dependent Claims 20-29 and 34 are also patentable over Holupka and Vining.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 4, 5, 8, 12, 19, 20-29, and 34 be withdrawn.

The rejection of Claims 13-16 and 42 under 35 U.S.C. § 103(a) as being unpatentable over Holupka and Edwards et al. (U.S. Patent No. 5,787,889, hereinafter "Edwards") is respectfully traversed.

Holupka is described above. Edwards describes a computation of an orthogonal projection of a current state of a reconstruction volume, so that the volume can be seen to grow during a scan. An orthogonal projection is used because its computation is simpler to render (no interpolations need to be computed to transform from a reference coordinate system to a displayed image raster coordinate system). A maximum intensity projection (MIP) rendering scheme is used in which a ray is cast along the depth of the volume, and the maximum value encountered is the value that is projected for that ray (e.g., the value used to derive a pixel for a given raster point on the 2D image projection). This rendering algorithm is computed efficiently on a multiprocessor (102/104). Column 13, lines 40-52.

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Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Holupka according to the teachings of Edwards. More specifically, it is respectfully submitted that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01. Accordingly, Applicants have not been provided with any reference which teaches an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame.

Rather, Holupka describe an image stack represented by a series of 2D images, and Edwards describes a maximum intensity projection rendering scheme.

The combination of Holupka and Edwards does not teach or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame.

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Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, "it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaack, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Although it is asserted within the Office Action that the motivation for combining Holupka with Edwards is that a skilled artisan would be motivated to combine the teachings of Edwards and Holupka since they are analogous in 3D imaging, Applicants respectfully submit that Edwards and Holupka, alone or in combination, do not describe or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, Holupka describe a 3D image raster represented as a series of 2D images, and Edwards describes a maximum intensity projection rendering scheme.

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Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of Claims 13-16 and 42 be withdrawn.

Furthermore, Applicants respectfully submit that no motivation for the combination can be found within Edwards or Holupka, as Holupka and Edwards teach away from each other. Specifically, Holupka describe a 3D image represented as a series of 2D images and in contrast to Holupka, Edwards describes a maximum intensity projection rendering scheme.

If art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. More specifically, Applicants respectfully submit that Edwards teaches away from Holupka, and as such, there is no suggestion or motivation to combine Edwards with Holupka.

Further, and to the extent understood, no combination of Holupka and Edwards, alone or in combination, describes or suggests the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claims 13-16 depend from Claim 1 which recites an imaging system including "an exam prescription subsystem which specifies the manner in which data is to be acquired; and a visualization subsystem responsible for controlling display of acquired images and data, said visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein said volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, said rotation angle varying cyclically as the 3D model is rendered from frame to frame".

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Neither Holupka nor Edwards, alone or in combination, describe or suggest an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Moreover, neither Holupka nor Edwards, alone or in combination, describe or suggest an imaging system wherein a volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, and in contrast to the present invention, Holupka describes a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D imaging volume, and Edwards describes a maximum intensity projection rendering scheme. Accordingly, Applicants respectfully submit that Claim 1 is patentable over Holupka and Edwards.

Claims 13-16 depend from independent Claim 1 which is submitted to be in condition for allowance. When the recitations of Claims 13-16 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that dependent Claims 13-16 are also patentable over Holupka and Edwards.

Claim 42 depends from Claim 35 which recites a method for operating a medical imaging system to generate three dimensional models while the system acquires cross-sectional data, wherein the method includes "acquiring a first slice of data; and generating a three dimensional model based on the first slice of data".

Neither Holupka nor Edwards, alone or in combination, describe or suggest a method for operating a medical imaging system to generate three dimensional models while the system acquires cross-sectional data, wherein the method includes acquiring a first slice of data, and

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generating a three dimensional model based on the first slice of data. Moreover, Neither Holupka nor Edwards, alone or in combination, describe or suggest a method including generating a three dimensional *model based on the first slice* of data. Rather, and in contrast to the present invention, Holupka describes a 3D image raster, and Edwards describes a maximum intensity projection rendering scheme. Accordingly, Applicants respectfully submit that Claim 35 is patentable over Holupka and Edwards.

Claim 42 depends from independent Claim 35 which is submitted to be in condition for allowance. When the recitations of Claim 42 are considered in combination with the recitations of Claim 35, Applicants respectfully submit that dependent Claim 42 is also patentable over Holupka and Edwards.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 13-16 and 42 be withdrawn.

The rejection of Claims 30-33 under 35 U.S.C. § 103(a) as being unpatentable over Holupka as modified by Vining and further in view of Edwards is respectfully traversed.

Holupka, Vining, and Edwards are described above.

Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. Obviousness cannot be established by merely suggesting that it would have been an obvious to one of ordinary skill in the art to modify Holupka according to the teachings of Vining and Edwards. More specifically, it is respectfully submitted that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01. Accordingly, Applicants have not been provided with any reference which teaches a visualization subsystem for a medical imaging system, the medical imaging

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system including a data acquisition system for acquiring scan data, the visualization subsystem including a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of the visualization subsystem, and a segmentation subsystem of the visualization subsystem, wherein the processor is further programmed to classify data into separate categories.

Rather, Holupka describe an image stack represented by a series of 2D images, Vining describes a three-dimensional image which can be recorded on a video recorder, and Edwards describes a maximum intensity projection rendering scheme.

The combination of Holupka, Vining, and Edwards does not teach or suggest a visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system for acquiring scan data, the visualization subsystem including a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of the visualization subsystem, and a segmentation subsystem of the visualization subsystem, wherein the processor is further programmed to classify data into separate categories.

Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, "it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found

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in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion nor motivation to combine the cited art, nor any reasonable expectation of success has been shown.

Since there is no teaching nor suggestion in the cited art for the claimed combination, the Section 103 rejection appears to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of Claims 30-33 be withdrawn.

Furthermore, Applicants respectfully submit that no motivation for the combination can be found within Edwards Vining, or Holupka, as Holupka, Vining, and Edwards teach away from each other. Specifically, Holupka describe a 3D image represented as a series of 2D images and in contrast to Holupka, Edwards describes a maximum intensity projection rendering scheme, and Vining describes a wireframe model generated from an isosurface.

If art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. More specifically, Applicants respectfully submit that Vining and Edwards teach away from Holupka as well as from each other, and as such, there is no suggestion or motivation to combine Vining and Edwards with Holupka.

Further, and to the extent understood, no combination of Vining, Holupka, and Edwards, alone or in combination, describes or suggests the claimed combination, and as such, the presently pending claims are patentably distinguishable from the cited combination. Specifically, Claims 30-33 depend from Claim 19 which recites a visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system for acquiring scan data, the visualization subsystem including "a processor programmed to render an

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image from data received from at least one of the data acquisition system, a filtering component of said visualization subsystem, and a segmentation subsystem of said visualization subsystem, wherein said processor is further programmed to classify data into separate categories".

None of Holupka, Vining, and Edwards, alone or in combination, describe or suggest a visualization subsystem for a medical imaging system, the medical imaging system including a data acquisition system for acquiring scan data, the visualization subsystem including a processor programmed to render an image from data received from at least one of the data acquisition system, a filtering component of the visualization subsystem, and a segmentation subsystem of the visualization subsystem, wherein the processor is further programmed to classify data into separate categories. Rather, and in contrast to the present invention, Holupka describes a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D imaging volume, Edwards describes a maximum intensity projection rendering scheme, and Vining describes a wireframe model generated from an isosurface. Accordingly, Applicants respectfully submit that Claim 19 is patentable over Holupka, Vining, and Edwards.

Claims 30-33 depend from independent Claim 19 which is submitted to be in condition for allowance. When the recitations of Claims 30-33 are considered in combination with the recitations of Claim 19, Applicants respectfully submit that dependent Claims 30-33 are also patentable over Holupka, Vining, and Edwards.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 30-33 be withdrawn.

The rejection of Claims 10 under 35 U.S.C. § 103(a) as being unpatentable over Holupka is respectfully traversed.

Holupka is described above. Applicants respectfully submit that the Section 103 rejection of the presently pending claims is not a proper rejection. As is well established, the

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mere assertion of obviousness does not support a prima facie obvious rejection. Rather, as is well established, each allegation of what would have been an obvious matter of design choice must always be supported by citation to some reference work recognized as standard in the pertinent art and the Applicants given the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference.

Applicants have not been provided with the citation to any reference supporting the combination made in the rejection. Moreover, Applicants is not aware of any known imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame.. The rejection, therefore, fails to provide the Applicants with a fair opportunity to respond to the rejection, and fails to provide the Applicants with the opportunity to challenge the correctness of the rejection.

Furthermore, Applicants respectfully submit that a prima facie case of obviousness has not been established. As explained by the Federal Circuit, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Kotzab, 54 USPQ2d 1308, 1316 (Fed. Cir. 2000). MPEP 2143.01.

Moreover, the Federal Circuit has determined that:

[I]t is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

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In re Fitch, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992). Further, under Section 103, "it is impermissible . . . to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." In re Wesslau, 147 USPQ 391, 393 (CCPA 1965). Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior art to combine such inferences, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991).

In the present case, neither a suggestion nor motivation to modify the cited art, nor any reasonable expectation of success has been shown. Specifically, no teaching, or suggestion has been shown to modify Holupka to include an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, the Section 103 rejection appears to be based on a hindsight reconstruction in which a disclosure and an isolated assertion have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants respectfully request that the Section 103 rejection of Claim 10 be withdrawn.

If art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention.

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Further, and to the extent understood, Holupka does not describe nor suggest the present invention. Specifically, Claim 10 depends from Claim 1 which recites Claim 1 recites an imaging system including "an exam prescription subsystem which specifies the manner in which data is to be acquired; and a visualization subsystem responsible for controlling display of acquired images and data, said visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein said volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, said rotation angle varying cyclically as the 3D model is rendered from frame to frame".

Holupka neither describes nor suggests an imaging system including an exam prescription subsystem which specifies the manner in which data is to be acquired, and a visualization subsystem responsible for controlling display of acquired images and data, wherein the visualization subsystem is configured to operate in a volume autoview mode so that during data acquisition, a real-time, incrementally updated, three-dimensional view of the data is displayed, wherein the volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Moreover, Holupka neither describes nor suggests an imaging system wherein a volume autoview mode can be performed in a rock mode wherein a rotation angle is applied to a 3D model, the rotation angle varying cyclically as the 3D model is rendered from frame to frame. Rather, and in contrast to the present invention, Holupka describes a phased array probe designed so that an array of transducers can rotate about an axis of the array sweeping out a 3D imaging volume. Accordingly, Applicants respectfully submit that Claim 1 is patentable over Holupka.

Claim 10 depend from independent Claim 1 which is submitted to be in condition for allowance. When the recitations of Claim 10 are considered in combination with the recitations of Claim 1, Applicants respectfully submit that dependent Claim 10 is also patentable over Holupka.

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For the reasons set forth above, Applicants respectfully request that the Section 103 rejections of Claim 10 be withdrawn.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,



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